Space Weather Forecast

Issued on Sunday, 10 March 2024 at 01:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight chance of Minor Storms, especially 10 and 11 March due to CME (coronal mass ejection) arrivals or fast solar wind connections. Chance of Moderate activity throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with the largest flare a Common-class flare from the large and complex region in the southwest quadrant. This is one of six regions on the visible disc, with the remaining regions all simple or fading.

No Earth directed CMEs have been observed in coronagraph imagery. A CME to the southwest will be analysed once sufficient imagery is available. A further CME to the northeast of satellite imagery appears to be from beyond the northeast limb and therefore not to be Earth-directed, but will be analysed.

Solar Wind / Geomagnetic Activity: Solar wind speeds were at slightly elevated levels due to the earth passing through a fast solar wind environment. Total magnetic field strength was weak, with the important north-south component also varying weakly. Overall geomagnetic activity was Quiet to Unsettled with an Active interval early in the period.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: A chance of Moderate activity through the period, mainly due to the large, complex region in the southwest with a flat trend due to no significant regions joining or leaving the disc in the next four days.

Solar Wind / Geomagnetic Activity: Two CMEs could potentially arrive at Earth through the forecast period. The first feature was due to arrive on 09 March, but with a small risk of arrival early on 10 March, although with decreased confidence. A second CME is forecast to arrive on 11 March, although confidence is low in timing and potential impacts.

A fast solar wind, with slightly elevated speeds may decline by around 11 March, with a further slightly elevated fast solar wind potentially connecting in the same period.

Geomagnetic activity is expected to be Quiet to Unsettled. There is a risk of Active to G1/Minor Storm intervals from either the CME arrivals or the possible onset of the coronal hole high speed stream on 10 or 11 March.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	20	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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